

CS-01-001



3643 #2
BT
01-10-02

October 16, 2001

To: Commissioner of Patents and Trademarks
Washington, D.C. 20231

RECEIVED

Fr: George O. Saile, Reg. No. 19,572
20 McIntosh Drive
Poughkeepsie, N.Y. 12603

NOV 14 2001

GROUP 3000

Subject:

Serial No. 09/912,737 07/26/01

Luona Goh, Simon Chooi,
Siew Lok Toh, Tong Earn Tay

A METHOD TO IMPROVE ADHESION OF
DIELECTRIC FILMS IN DAMASCENE
INTERCONNECTS

Grp. Art Unit: 3643

INFORMATION DISCLOSURE STATEMENT

Enclosed is Form PTO-1449, Information Disclosure Citation
In An Application.

The following Patents and/or Publications are submitted to
comply with the duty of disclosure under CFR 1.97-1.99 and
37 CFR 1.56. Copies of each document is included herewith.

U.S. Patent 6,184,123 to Ge et al., "Method to Prevent
Delamination of Spin-On-Glass and Plasma Nitride Layers Using
Ion Implantation," discloses a silicon ion implantation into
spin-on-glass to improve adhesioon to an overlying silicon
nitride layer.

U.S. Patent 6,143,670 to Cheng et al., "Method to Improve Adhesion Between Low Dielectric Constant Layer and Silicon Containing Dielectric Layer," discloses a nitrogen ion implantation into a polymer layer to improve adhesion to an overlying layer containing silicon, oxygen, and nitrogen.

U.S. Patent 5,985,750 to Oda, "Manufacturing Method of Semiconductor Device," discloses implanting silicon ions into a BPSG layer to form a damage layer before depositing a fluorine amorphous carbon layer.

The following two U.S. Patents teach an ion implantation into spin-on-glass to prevent moisture absorption:

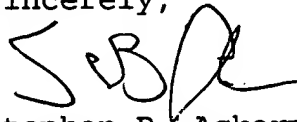
- 1) U.S. Patent 6,117,798 to Fang et al., "Method of Spin-On-Glass Planarization."
- 2) U.S. Patent 5,459,086 to Yang, "Metal Via Sidewall Tilt Angle Implant for SOG."

U.S. Patent 4,849,248 to Hashimoto, "Ion Implantation Method for Making Silicon-Rich Silicon Dioxide Film," discloses silicon ion implantation into silicon dioxide to control grain size.

U.S. Patent 6,153,523 to Van Ngo et al., "Method of Forming High Density Capping Layers for Copper Interconnects with Improved Adhesion," discloses the use of an ammonia-containing plasma to roughen a copper surface to improve adhesion of an overlying silicon nitride capping layer.

U.S. Patent 5,192,697 to Leong, "SOG Curing by Ion Implantation," teaches curing of spin-on-glass using ion implantation.

Sincerely,

A handwritten signature in black ink, appearing to read 'SBA', with a stylized flourish extending from the end.

Stephen B. Ackerman,
Reg. No. 37761